

# SIEMENS

PATENT

Attorney Docket No. 2002P00241WOUS

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:

Inventor:	Peter Tiemann	)	Group Art Unit: 3746
		)	
Serial No.:	10/524,523	)	Examiner: Gerald Luther Sung
		)	
Filed:	02/11/2005	)	Confirmation No. 1108

Title:           GAS TURBINE COMBUSTION CHAMBER

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Sir:

APPELLANT'S BRIEF UNDER 37 CFR 41.37

This brief is in furtherance of the Notice of Appeal filed concurrently with this paper.

1.     **REAL PARTY IN INTEREST - 37 CFR 41.37(c)(1)(i)**

The real party in interest in this Appeal is the Siemens Aktiengesellschaft.

2. RELATED APPEALS AND INTERFERENCES - 37 CFR 41.37(c)(1)(ii)

There is no other appeal, interference or judicial proceeding that is related to or that will directly affect, or that will be directly affected by, or that will have a bearing on the Board's decision in this Appeal.

3. STATUS OF CLAIMS - 37 CFR 41.37(c)(1)(iii)

Claims pending: 8 and 11-15

Claims cancelled: 1-7 and 9-10

Claims withdrawn but not cancelled: none

Claims allowed: none

Claims objected to: none

Claims rejected: 8 and 11-15

The claims on appeal are 8 and 11-15.

4. STATUS OF AMENDMENTS - 37 CFR 41.37(c)(1)(iv)

No Amendment was filed after the final rejection contained in the Office communication mailed on April, 01 2008.

5. SUMMARY OF THE CLAIMED SUBJECT MATTER- 37 CFR 41.37(c)(1)(v)

This invention relates generally to a gas turbine combustion chamber with a manhole access to the combustion chamber interior, which may be sealed with a manhole cover, and to a cooling scheme for the same.

Applicant submitted the specification to the examiner with text subdivided according to paragraph and page numbers (not line numbers). For the convenience of the honorable Board, the summary below includes citations referring to line numbers of each numbered paragraph of the specification (i.e. para 0023 lines 1-10).

Referring to Figure 2, **independent claim 8** is directed to a gas turbine combustion chamber including a combustion chamber wall 23 and an attached liner element 25 enclosing a wall cooling chamber 26 (see e.g., page 6 para 0024 lines 6-7), a manhole 27 through the combustion chamber wall 23 to access a combustion chamber interior 24 (see e.g., page 6 para

0024 lines 1-2), a manhole cover 28 to seal the manhole 27, and an inner cooling chamber 31 (see e.g., page 6 para 0024 lines 2-4). The cooling chamber 31 is arranged within the manhole cover 28 and the manhole cover 28 seals off the inner cooling chamber 31 of the manhole cover 28 from combustion chamber interior 24, and the inner cooling chamber 31 of the manhole cover 28 is connected for fluid flow purposes to the wall cooling chamber 26 of the combustion chamber wall 23. (see e.g., page 6 para 0024 lines 4-6 and 8-10)

Referring to Figure 2, dependant claim 11 recites a gas turbine chamber having an inner cooling chamber 31 of the manhole cover 28 that is directly connected to the wall cooling chamber 26 of the combustion chamber wall 23 by inserting the manhole cover 28 into the manhole 27. (see e.g., page 6 para 0024 lines 8-10 and para 0025 lines 1-2)

Referring to Figure 2, dependant claim 12 recites a gas turbine combustion chamber having a fixing element 43 which supports a cover element 30 of the manhole cover 28 and simultaneously holds a liner element 25 adjacent to the manhole cover 28 against the combustion chamber wall 23. (see e.g., page 7 para 0026 lines 1-4)

Referring to Figure 2, dependant claim 13 recites a gas turbine combustion chamber where the cross-section of the fixing element 43 is essentially U-shaped, whereby a first side of the U supports the cover element 30 and the second part of the U holds the liner element 25. (see e.g., page 7 para 0027 lines 3-6)

Referring to Figure 2, dependant claim 14 recites a gas turbine chamber where the first side of the fixing element 43 projects into the manhole 27 such that the cover liner 30 of the manhole cover 28 is supported and the manhole cover 28 can be removed from the manhole 27 without removing the fixing element 43. (see e.g., page 7 para 0028 lines 1-4)

Referring to Figure 2, **independent claim 15** recites a gas turbine combustion chamber including the combustion chamber wall 23 and an attached liner element 25 enclosing a wall cooling chamber 26 (see e.g., page 6 para 0024 lines 6-7), a manhole 27 through the combustion chamber wall 23 to access the combustion chamber interior 24 (see e.g., page 6 para 0024 lines 1-2), a manhole cover 28 to seal the manhole 27 (see e.g., page 6 para 0024 lines 2-4), a cover element 30 of the manhole cover 28 (see e.g., page 6 para 0024 lines 2-4), an inner cooling chamber 31 arranged between the manhole cover 28 and the cover element 30 (see e.g., page 6 para 0024 lines 4-6), wherein the manhole cover element 30 seals off the inner cooling chamber 31 of the manhole cover 28 from the combustion chamber interior 24 (see e.g., page 6 para 0024

lines 4-6) and , an essentially U-shaped fixing element 43 disposed against the combustion chamber interior 24 having a first side of the U that supports the cover element 30 and a second part of the U simultaneously holding the liner element 25 adjacent to the manhole cover 28 against the combustion chamber wall 23 wherein the first side projects into the manhole 27 such that while the cover element is thus supported the manhole cover can be removed from the manhole 27 (see e.g., page 7 para 0026 lines 1-4 para and 0027 lines 3-6) and the inner cooling chamber of the manhole cover is connected for fluid flow purposes to the wall cooling chamber. (see e.g., page 6 para 0024 lines 8-10)

6. GROUNDS OF REJECTION TO BE REVIEWED UPON APPEAL - 37 CFR 41.37(c)(1)(vi)

A. The grounds for rejection of claim 8 is that under 35 USC § 103(a) the claim is unpatentable over Babcock (GB 626,249) in view of Albrecht (USPN 6,415,724 B1) in further view of DuBell (USPN 3,978,662).

B. The grounds for rejection of claim 11 is that 35 USC § 103(a) the claim is unpatentable over Babcock (GB 626,249) as previously modified by Albrecht (USPN 6,415,724 B1 ) and DuBell (USPN 3,978,662).

C. The grounds for rejection of claims 12-15 is that under 35 USC § 103(a) the claims are unpatentable over Babcock (GB 626,249) in view of Albrecht (USPN 6,415,724 B1) in further view of DuBell (USPN 3,978,662) and Stanke (USPN 4,189,352).

7. ARGUMENT 37 CFR 41.37(c)(1)(vii)

A. Rejection of claim 8 under 35 USC § 103(a):

Independent Claim 8 recites “a manhole through the combustion chamber wall to access the combustion chamber interior...an inner cooling chamber arranged within the manhole cover...wherein the inner cooling chamber of the manhole cover is connected for fluid flow purposes to the wall cooling chamber of the combustion chamber wall”. The examiner contends that “[o]ne of ordinary skill in the art...would have found it obvious to modify the combustion chamber in Babcock et al. with well known methods of combustion chamber wall cooling...taught by DuBell et al. in order to provide an efficient cooling means to cool the

combustion chamber and a cooled door taught by Albrecht et al. in order to provide a means to access the interior of the combustion chamber...” Moreover, the examiner stresses that “one of ordinary skill in the art, in light of the well known combustion chamber cooling means taught by DuBell et al., would have found it obvious to combine... Babcock et al. and Albrecht et al. in order to provide a more efficient cooling means where the continuity of the cooling chambers in the combustion chamber and the door would have yielded a more cost effective and efficient system.”

Babcock teaches an improved combustion chamber including a closure means providing access to the interior of the combustion chamber where such installation has fluid cooled walls. DuBell discloses a well known method of cooling a combustor wall by passing cooling air through a plenum located between the outer wall and the inner liner of the combustor, while Albrecht teaches a high temperature boiler door cooled by a water-cooled jacket mounted on the panel of the door.

However, the Applicant argues that the Examiner has erred in his conclusion. MPEP § 2143.01 I provides that “Obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so”. MPEP §2143.03 provides that to establish prima facie obviousness of a claimed invention, all the claims limitations must be taught or suggested by the prior art. Moreover, “a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art”. *KSR International Co. v. Teleflex Inc.*, 550 U.S\_\_\_, 127 S. Ct. 1727, 1741(2007). The Examiner does not cite any suggestion or motivation in the prior art and instead bases obviousness on the general motivation to provide “a more cost effective and efficient system”.

While, the Applicant agrees that a natural motivation exists to produce a gas turbine combustor access that is more cost effective and utilizes more efficient cooling, Applicant respectfully disagrees that such motivation is sufficient to suggest to one skilled in the art to form a combustion chamber wall manhole cover having an inner cooling chamber that is connected to a cooling chamber of the combustion chamber wall. The prior art relied on by the Examiner contains only three of four limitations of particular interest in Claim 8. The first limitation is the wall opening in a combustion chamber as taught by Babcock. The second limitation is the cooling of a combustor wall by passing air through the inside of the wall as taught by DuBell.

The third limitation is a cooled door as taught by Albrecht. Combined together, Babcock, DuBell, and Albrecht do not form or suggest the fourth limitation of claim 8: i.e. connecting the cooling air of the combustor wall to cool the cooled door.

Without the fourth limitation present in the prior art, the Examiner cannot properly rely on the generic economic motivation to create “a more cost effective and efficient system” as sufficient motivation to come up with the missing element. The fourth element claimed is outside the prior art. Motivation to lower costs and increase efficiency pushes one skilled in the art to expand resources to solve a particular problem, but does not present the solution. A determination of motivation found outside the prior art is only properly made by considering the existing technical obstacles regarding a problem and weighting them against generally accepted ability to overcome them with routine experimentation by persons of ordinary skill in the art. See e.g. *Micro Chemical v. Great Plains Chemical Co., Inc.*, 103 F.3d 1528 (Fed. Cir. 1997); MPEP §2143.01 I (motivation may come from the nature of the problem to be solved, and the knowledge of persons of ordinary skill in the art). If achieving “a more cost effective and efficient system” alone is sufficient to confer motivation to come up with the missing element, then virtually everything would be unpatentable as a mere “cost effective” or a more “efficient” improvement over the prior art. Thus, the Examiner’s finding of motivation solely based on “a more cost effective and efficient system” ignores the significant technical issues and obstacles discovered and overcome by the Applicant in the course of inventing the above-cited fourth element of the claim.

The Examiner have not established a proper suggestion or motivation for further modifying the prior art to arrive at the Appellant's invention. Therefore, the rejection should be overturned.

B. Rejection of claim 11 under 35 USC § 103(a):

Claim 11 depends from independent claim 8 and is therefore allowable for the reasons presented above.

Furthermore, dependant Claim 11 recites “inner cooling chamber of the manhole cover is directly connected to the wall cooling chamber of the combustion chamber wall by inserting the manhole cover into the manhole.” The Examiner concludes that “Babcock et al., as previously modified by Albrecht et al., and DuBell et al., disclose a means that when connected would have

directly connected the cooling chambers in the door and the combustion chamber wall when the door is closed.” However, the Examiner has failed to locate sufficient motivation in the prior art that teaches or suggests the “directly connected” limitation of Claim 11.

Babcock teaches a closure means that can be opened in walls of chambers arranged to contain pressurized gases. Babcock also suggests that the walls of such closure means be fluid cooled to protect from high temperatures. DuBell discloses a method of cooling a combustor wall by passing cooling air through a plenum located between the outer wall and the inner liner of the combustor, and Albrecht teaches a water-jacketed boiler door.

DuBell does not cover any type of access means to the combustion chamber through the combustion wall. Babcock teaches that the cooling fluid may come from a forced draft fan, but does not suggest that such fluid be in communication with the chamber walls (page 4 lines 4-9). The door disclosed in Albrecht has water-cooled jackets mounted on the door frame, but the cooling water is taught to be supplied by external hoses (col. 1 lines 28-29). Thus, combining the prior art as suggested by the Examiner would yield no more than a combustion chamber having an access closure means that is cooled by fluid supplied from an external source. The cited combination does not teach or suggest that the closure means be “directly connected to the wall cooling chamber of the combustion chamber wall by inserting the manhole cover into the manhole” for fluid cooling purposes.

Moreover, the Examiner also seems to be making an inherency type argument, but the “directly connected” limitation of Claim 11 is not at all inherent in the prior art cited, as described above.

C. Rejection of claims 12-15 under 35 USC § 103(a):

C.1. Arguments applicable to dependent claims 12-14:

Claims 12-14 depend from independent claim 8 and from dependent claim 11 are therefore allowable for the reasons stated above with regard to claims 8 and 11.

The Examiner concludes that Claims 12-14 are unpatentable over Babcock in view of Albrecht in further view of DuBell and Stanke. The Examiner errs in reaching this conclusion by assuming that the U-shaped fixing element claimed by the Applicant is disclosed in the seal member of Stanke. However, the two components are structurally different and actually perform different functions.

The seal member in Stanke is a flexible member that is secured to the peripheral edge of the coke oven door with a bolt (col. 4 lines 59-60). The member provides a seal between the coke oven door and the door jamb by way of a sealing relation between the sealing edge portion of the member and the surface of the jamb (col. 5 lines 5-8). The seal is maintained by applying pressure to the sealing edge portion of the seal member causing elastic deformation to the member corresponding to the range of deformation of the coke oven door (col. 5 lines 19-20, col. 6 lines 26-27).

Claims 12-14 are directed to a "a fixing element which supports a cover element of the manhole cover, and simultaneously holds a liner element adjacent to the manhole cover against the combustion chamber wall." The fixing element is attached to the combustion chamber wall with screws such that the fixing element is sufficient to *hold* the liner element against the combustion chamber wall and to simultaneously *support* the cover liner against the upper section of the manhole cover. According to Claim 13 "a cross-section of the fixing element is essentially U-shaped, whereby a first side of the U supports the cover element and a second part of the U holds the liner element." Claim 14 recites that "first side of the fixing element projects into the manhole such that the cover liner of the manhole is supported and the manhole cover can be removed from the manhole without removing the fixing element." Thus, Applicant's fixing element operates by supporting the manhole and combustion chamber wall liners flush against the fixing element. Moreover, Applicant's U-shaped fixing element of claims 13 and 14 is designed to bridge the area between the inner cover liner edge of the manhole and the edge of the inner liner elements of the combustion chamber so as to channel any escaped cooling air axially along the element to the burners. Therefore, while the seal of Stanke and one embodiment of the Appellant's fixing element are both U-shaped, it is clear that the seal member taught in Stanke is different from the fixing element claimed by the Appellant. Furthermore, the seal of Stanke can not inherently be said to function as the claimed fixing element since it is purposefully flexible and is incapable of carrying the requisite mechanical loads.

In the Appellant's invention, it is the cover liner element of the manhole cover and the liner element of the combustion chamber wall that are fitted adjacently to form the actual seal around the manhole. Applicant's fixing element simply functions to *support* the cover liner and at the same time adjacently *hold* in place the liner element, whereas the seal member in Stanke



itself performs the sealing function by *deforming to seal* the changing area between the coke oven door and the jamb, thus compensating for the thermal deformation of the door.

Since the seal member in Stanke is different from the fixing element disclosed by the Applicant, combining Babcock as modified by Albrecht and DuBell with Stanke would not yield the limitations of the fixing element in Claims 12-14. Therefore, the cited combination does not teach or suggest all of the limitations of the rejected claims, and therefore no *prima facie* case for obviousness has been established and the rejections should be overturned.

C.2 Arguments applicable to dependent claim 15:

Independent claim 15 is rejected as being unpatentable over Babcock in view of Albrecht in further view of DuBell and Stanke. Claim 15 recites “a manhole through the combustion chamber wall to access the combustion chamber interior...an inner cooling chamber arranged within the manhole cover...an essentially U-shaped fixing element disposed against the combustion chamber interior and comprising a first side of the U that supports the cover element, and a second part of the U simultaneously holding the liner element, adjacent to the manhole cover, against the combustion chamber wall...wherein the inner cooling chamber of the manhole cover is connected for fluid flow purposes to the wall cooling chamber of the combustion chamber wall”. As argued above with respect to claims 8 and 12-14, the cited prior art fails to teach or suggest all of these limitations, particularly with respect to the connection of the inner cooling chamber of the manhole cover and the wall cooling chamber, and with respect to the U-shaped fixing element. Thus, no *prima facie* case for obviousness has been established for claim 15 and the rejection should be overturned.

8. CLAIMS APPENDIX - 37 CFR 41.37(c) (1) (viii).

A copy of the claims involved in this appeal is attached as a claims appendix under 37 CFR 41.37(c) (1) (viii).

9. EVIDENCE APPENDIX - 37 CFR 41.37(c) (1) (ix)


None is required under 37 CFR 41.37(c) (1) (ix).

10. RELATED PROCEEDINGS APPENDIX - 37 CFR 41.37(c) (1) (x)

None is required under 37 CFR 41.37(c) (1) (x).

Respectfully submitted,

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By: 

John P. Musone  
Registration No. 44,961  
(407) 736-6449

Siemens Corporation  
Intellectual Property Department  
170 Wood Avenue South  
Iselin, New Jersey 08830

## APPENDIX OF CLAIMS ON APPEAL

8. A gas turbine combustion chamber, comprising:  
a combustion chamber wall and an attached liner element enclosing a wall cooling chamber;  
a manhole through the combustion chamber wall to access a combustion chamber interior;  
a manhole cover to seal the manhole; and  
an inner cooling chamber arranged within the manhole cover;  
wherein the manhole cover seals off the inner cooling chamber of the manhole cover from the combustion chamber interior, and  
wherein the inner cooling chamber of the manhole cover is connected for fluid flow purposes to the wall cooling chamber of the combustion chamber wall.

11. The gas turbine combustion chamber according to Claim 8, wherein the inner cooling chamber of the manhole cover is directly connected to the wall cooling chamber of the combustion chamber wall by inserting the manhole cover into the manhole.

12. The gas turbine combustion chamber according to Claim 11, wherein a fixing element which supports a cover element of the manhole cover, and simultaneously holds a liner element adjacent to the manhole cover against the combustion chamber wall.

13. The gas turbine combustion chamber according to Claim 12, wherein the cross-section of the fixing element is essentially U-shaped, whereby a first side of the U supports the cover element and a second part of the U holds the liner element.

14. The gas turbine combustion chamber according to Claim 13, wherein the first side of the fixing element projects into the manhole such that the cover liner of the manhole cover is supported, and the manhole cover can be removed from the manhole without removing the fixing element.

15. A gas turbine combustion chamber, comprising:  
a combustion chamber wall and an attached liner element enclosing a wall cooling chamber;  
a manhole through the combustion chamber wall to access a combustion chamber interior;  
a manhole cover to seal the manhole;  
a cover element of the manhole cover;  
an inner cooling chamber arranged between the manhole cover and the cover element, wherein the manhole cover element seals off the inner cooling chamber of the manhole cover from the combustion chamber interior;  
an essentially U-shaped fixing element disposed against the combustion chamber interior and comprising a first side of the U that supports the cover element, and a second part of the U simultaneously holding the liner element, adjacent to the manhole cover, against the combustion chamber wall, wherein the first side projects into the manhole such that while the cover element is thus supported the manhole cover can be removed from the manhole; and  
wherein the inner cooling chamber of the manhole cover is connected for fluid flow purposes to the wall cooling chamber.

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## EVIDENCE APPENDIX

None.

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## RELATED PROCEEDINGS APPENDIX

None.